Tenure-track position at the EDYSAN lab - Jules Verne University of Picardie in Amiens, France

Junior Professorship Chair:
Rapid adaptation of plants in the context of climate change: functional and evolutionary ecology of holobionts

The junior professor will be recruited for a 3 yr-period (starting at Autumn 2023) and will benefit from a dedicated research environment together with a grant of ca. 300KÃ¢Â,Â¬ to achieve his/her research project. During this period, the junior professor will have to teach ca. 90h per year. At the end of the 3 yr period, if successful, the junior professor will get a full professorship (permanent position) at the Jules Verne University of Picardie in Amiens. There is a two-step application: first send a full CV to the address below. If the application is pre-selected, then any selected applicant will have to complete a full on-line application form and will eventually be auditioned by a recruitment committee.

Contact: Prof. Guillaume DECOCQ (guillaume.decocq@u-picardie.fr)

Background of the position:

Climate change occurs at an unprecedented speed, exerting novel constrains on living organisms and their network of interactions, thereby impacting ecosystem functioning and services. In this context, species may either adapt locally to self-maintain in a changing environment. (e.g. rapid adaptation of their microbiome) or migrate to track their climatic niche, eventually together with part of their mutualists and parasites. In case none of these two ways is possible, then the species is at risk of local extinction. Since the natural capacity of species to adapt or migrate is species-specific and even individual-specific in some cases, climate change reshuffles the composition of local biotic assemblages (genetic and species diversity), thereby affecting interaction networks, ecosystem functioning and (dis)services delivered to the society. In the special case of production systems (managed forests and agroecosystems), exotic species may be newly introduced because they are supposed to be better adapted to developing climate conditions (i.e. alien tree species, exotic crops). These newly introduced species may also host Ã¢Â€Âœpassengerà¢Â€Â biota (e.g. microbiome, mutualists, parasites, pests). Also, some exotic invasive species may spontaneously invade those production ecosystems. How ecosystems in general and production systems in particular actually respond to the various drivers associated with climate change remains a challenging but timely research question.

The chair aims at tackling this challenge. Conceptually, the chair refers to the holobiont dimension and extended phenotype of plant species. Plants that structure forest ecosystems (i.e. trees) or agroecosystems (i.e. crops) is a Ã¢Â€Âœsuper-organismÃ¢Â€Â consisting of the plant itself (eventually complex, cf. individual mosaics) together with all biota living into and on its tissues, including root and leaf microbiomes, mutualists arthropods, etc. Depending upon the composition of the holobiont and its associated hologenome, a given plant species may exhibit phenotypic plasticity, which is widely acknowledged as a mechanism for rapid adaptation, to changing environmental conditions, at least as important as epigenetic mechanisms. Therefore, in an ecosystem context, interactions among holobionts can be addressed as networks of interactions between, on the first hand, plants themselves and, on the second hand, plants and their mutualist/parasite organisms. How these interaction networks respond to climate change and how they relate to ecosystem resilience and homeostasis are key research questions at the core of the opened chair. To answer these questions, approaches coupling in natura studies, field, greenhouse and lab experiments, and modelling are encouraged.

The research project is expected to root in fundamental ecology with clear applied perspectives (e.g. forest adaptation to climate change). From a fundamental point of view, the project is expected to shed light on the holobiontic functioning of plants, especially forest trees or crops, but also invasive alien plant species; on the dynamics of biotic interaction networks into which the plant takes place; on the impacts of individual- and community-scale holobiontic changes on ecosystem functioning (e.g. carbon sequestration, biomass production, biocontrol). The general framework of the project should be emergent constrains exerted by climate change. From an applied perspective, the project is expected to contribute to increasing the sustainability of production systems, either directly (e.g. choice of species to be promoted) or indirectly (e.g. by acting on components of the holobiome).